

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended): A liquid crystal display device comprising:
a pair of substrates;
a liquid crystal layer held between the pair of substrates;
at least one of the pair of substrates being provided with a pair of electrodes for applying a lateral electric field to the liquid crystal layer; and
oriented films, free from side chain type structure, formed on both of the pair of substrates; and at least one of the oriented films is selected through a method of measuring AC residual image which comprises:
a first step of stabilize a display panel;
a second step of measuring a brightness $B_b(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is increased;
a third step of driving the display panel for a predetermined period with predetermined signal voltage V_{max} ;
a fourth step of measuring a brightness $B_a(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is decreased; and
a fifth step of obtaining a value of the AC residual image by the following formula:
 $B(V_{sig})\% = [B_a(V_{sig}) - B_b(V_{sig})] / B_b(V_{sig});$ and

wherein [[an]]~~the~~ AC residual image which occurs even in a case of driving by pure AC is less than 8%.

Claim 2 (Previously Presented): A liquid crystal display device according to claim 1, wherein a specific resistance of the liquid crystal layer is 10^{10} $\Omega\cdot\text{cm}$ or more.

Claim 3 (Previously Presented): A liquid crystal display device according to claim 1, wherein at least one of the oriented films is an organic polymer containing at least one of a polymer and an oligomer in which a weight substance with a long-chain alkyl group applied to an amine component or an acid sentence is at least 5% and at most 30% of the total molar amount.

Claim 4 (Previously Presented): A liquid crystal display device according to claim 3, wherein a weight average molecular weight of the polymer and the oligomer is at least 2,000 and at most 30,000.

Claim 5 (Previously Presented): A liquid crystal display device according to claim 3, wherein the polymer and the oligomer contain a long-chain alkylene group of at least one of a main chain type and a terminal type.

Claim 6 (Previously Presented): A liquid crystal display device according to claim 1, wherein at least one of the oriented films is an organic polymer of a polymer and/or oligomer amic acid imide type, a polymer and/or oligomer

amide-imide type, a polymer and/or oligomer imidosiloxane type, or a polymer and/or oligomer amide-imide type containing a long-chain alkylene group.

Claim 7 (Currently Amended): A liquid crystal display device comprising:

a pair of substrates;
a liquid crystal layer held between the pair of substrates;
at least one of the pair of substrates being provided with at least a pair of electrodes for applying a lateral electric field to the liquid crystal layer; and
at least an oriented film, free from side chain type structure, formed on the electrodes, and selected through a method of measuring AC residual image which comprises:

a first step of stabilize a display panel;
a second step of measuring a brightness $B_b(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is increased;
a third step of driving the display panel for a predetermined period with predetermined signal voltage V_{max} ;
a fourth step of measuring a brightness $B_a(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is decreased; and
a fifth step of obtaining a value of the AC residual image by the following formula:
$$\Delta B(V_{sig}) (\%) = [B_a(V_{sig}) - B_b(V_{sig})] / B_b(V_{sig}); \text{ and}$$

wherein [[an]]the AC residual image which occurs even in a case of driving by pure AC is less than 8%.

Claim 8 (Previously Presented): A liquid crystal display device according to claim 7, wherein a specific resistance of the liquid crystal layer is 10^{10} $\Omega\cdot\text{cm}$ or more.

Claim 9 (Previously Presented): A liquid crystal display device according to claim 7, further comprising at least a protecting film on the pair of electrodes; wherein the oriented film is formed on the protecting film.

Claim 10 (Previously Presented): A liquid crystal display device according to claim 7, wherein the oriented film is an organic polymer containing at least one of a polymer and an oligomer in which a weight substance with a long-chain alkyl group applied to an amine component or an acid sentence is at least 5% and at most 30% of the total molar amount.

Claim 11 (Previously Presented): A liquid crystal display device according to claim 10, wherein a weight average molecular weight of the polymer and the oligomer is at least 2,000 and at most 30,000.

Claim 12 (Previously Presented): A liquid crystal display device according to claim 10, wherein the polymer and the oligomer contain a long-chain alkylene group of at least one of a main chain type and a terminal type.

Claim 13 (Previously Presented): A liquid crystal display device according to claim 7, wherein the oriented film is an organic polymer of a polymer and/or oligomer amic acid imide type, a polymer and/or oligomer amide-imide type, a polymer and/or oligomer imidosiloxane type, or a polymer and/or oligomer amide-imide type containing a long-chain alkylene group.

Claim 14 (Currently Amended): A liquid crystal display device comprising:

a pair of substrates;
a liquid crystal layer held between the pair of substrates;
at least one of the pair of substrates being provided with a pair of electrodes for applying a lateral electric field to the liquid crystal layer;
at least a protecting film for protecting at least one of the pair of electrodes; and

oriented films, free from side chain type structure, formed on both of the pair of substrates, at least one of the oriented films being arranged to cover the protecting film; and being selected through a method of measuring AC residual image which comprises:

a first step of stabilize a display panel;
a second step of measuring a brightness $B_b(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is increased;
a third step of driving the display panel for a predetermined period with predetermined signal voltage V_{max} .

a fourth step of measuring a brightness $B_a(V_{sig})$ of the display panel, while a signal voltage V_{sig} applied thereto is decreased; and
a fifth step of obtaining a value of the AC residual image by the following formula:

$$\Delta B(V_{sig}) (\%) = [B_a(V_{sig}) - B_b(V_{sig})] / B_b(V_{sig}); \text{ and}$$

wherein [[an]]~~the AC residual image which occurs even in a case of driving by pure AC~~ is less than 8%.

Claim 15 (Previously Presented): A liquid crystal display device according to claim 14, wherein a thickness of the protecting film is in a range from 0.1 μm to 0.7 μm .

Claim 16 (Previously Presented): A liquid crystal display device according to claim 15, wherein a specific resistance of the liquid crystal layer is $10^{10} \Omega\cdot\text{cm}$ or more.

Claim 17 (Previously Presented): A liquid crystal display device according to claim 15, wherein at least one of the oriented films is an organic polymer containing at least one of a polymer and an oligomer in which a weight substance with a long-chain alkyl group applied to an amine component or an acid sentence is at least 5% and at most 30% of the total molar amount.

Claim 18 (Previously Presented): A liquid crystal display device according to claim 17, wherein a weight average molecular weight of the polymer and the oligomer is at least 2,000 and at most 30,000.

Claim 19 (Previously Presented): A liquid crystal display device according to claim 17, wherein the polymer and the oligomer contain a long-chain alkylene group at least one of a main chain type and a terminal type.

Claim 20 (Previously Presented): A liquid crystal display device according to claim 15, wherein at least one of the oriented films is an organic polymer of a polymer and/or oligomer amic acid imide type, a polymer and/or oligomer amide-imide type, a polymer and/or oligomer imidosiloxane type, or a polymer and/or oligomer amide-imide type containing a long-chain alkylene group.